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Park et al.

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(54) **MULTIPLE LAUNDRY TREATING MACHINE**

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D06F 37/20; D06F 37/206; D06F 37/24;
D06F 39/12

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(Continued)

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(56) **References Cited**

U.S. PATENT DOCUMENTS

3,402,477 A 9/1968 Hubbard
3,555,701 A 1/1971 Hubbard

(Continued)

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FOREIGN PATENT DOCUMENTS

CN 2441827 Y 8/2001
CN 1637785 7/2005

(Continued)

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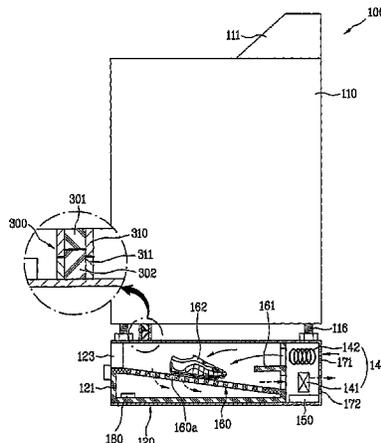
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(57) **ABSTRACT**

A multiple laundry treating machine, in which an auxiliary laundry treating device is coupled to a general laundry treating device, is disclosed. The multiple laundry treating machine includes a main laundry treating device for washing or drying laundry contained in an interior of the main laundry treating device, an auxiliary laundry treating device arranged at one side of the main laundry treating device, the auxiliary laundry treating device having a volume and a height respectively smaller than a volume and a height of the main laundry treating device, and having a laundry container formed in an interior of the auxiliary laundry treating device, and a connecting unit for connecting the main and auxiliary laundry treating devices, to enable communication or control operations between the main and auxiliary laundry treating devices. In accordance with the multiple laundry devices, it is possible to achieve a convenience in use and to save energy because a small amount of clothes or shoes can be dried by the auxiliary laundry treating device, without driving a laundry treating device having a relatively-large capacity.

22 Claims, 9 Drawing Sheets



(58) **Field of Classification Search**

USPC 34/596, 88, 89; 68/19.2
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

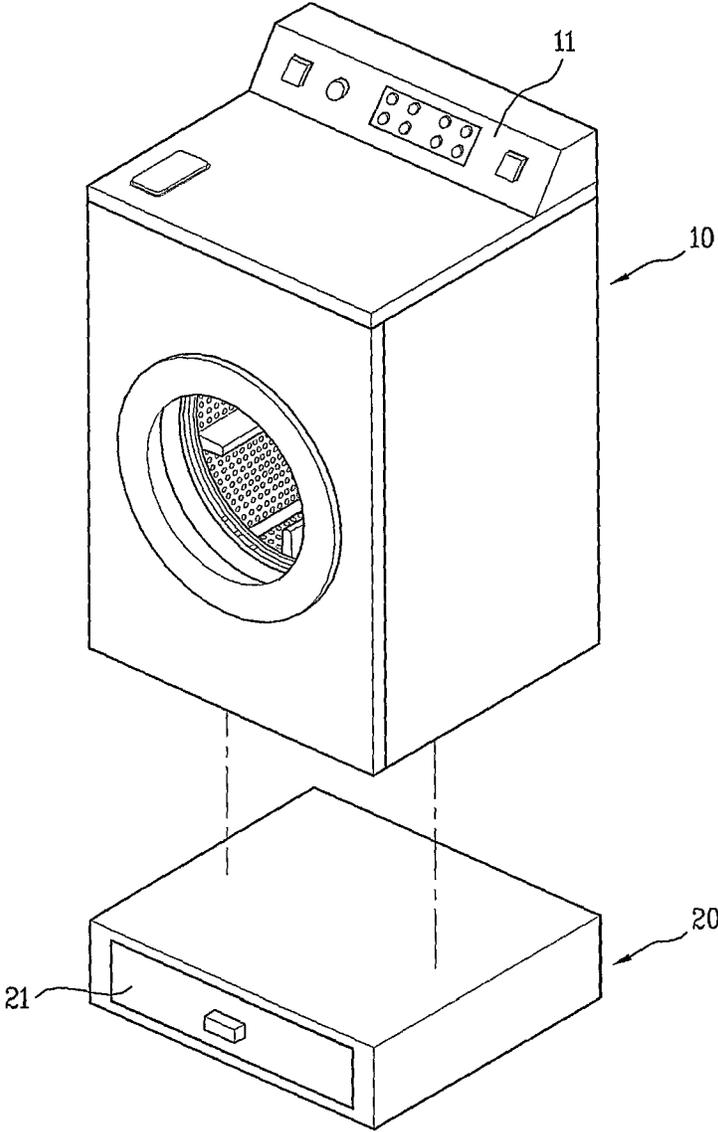
4,447,705	A	5/1984	Bullock
4,663,948	A	5/1987	Rummel
4,819,341	A	4/1989	Gayso
6,463,766	B2*	10/2002	Kubota et al. 68/12.18
6,618,887	B2*	9/2003	Kim et al. 8/158
7,093,374	B2	8/2006	Yang et al.
8,312,638	B2*	11/2012	Park D06F 58/10 34/209
2006/0010934	A1	1/2006	Kim
2006/0090524	A1	5/2006	Jeon et al.
2006/0112737	A1*	6/2006	Sunshine et al. 68/3 R
2006/0137210	A1*	6/2006	Lee D06F 58/20 34/201
2006/0150689	A1	7/2006	Kim et al.
2007/0151120	A1	7/2007	Tomasi et al.

FOREIGN PATENT DOCUMENTS

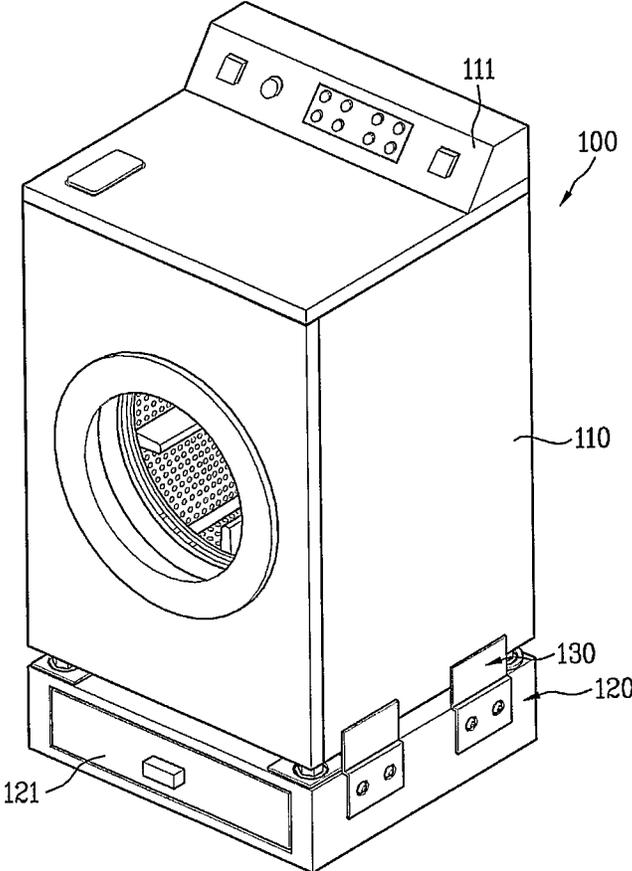
CN	1721713	1/2006
CN	2755141 Y	2/2006
CN	2808972 Y	8/2006
DE	33 29 615 A1	2/1985
EP	0 618 322 A1	10/1994
EP	0 667 412 A1	8/1995
EP	0747523	12/1996
EP	1028188	8/2000
EP	1439258 A1	7/2004
EP	1548679 A2	6/2005
EP	1616991 A1	1/2006
EP	1621660	2/2006
JP	54108060 A2	8/1979
JP	04084997	3/1992
KR	10-0146948 B1	5/1998
KR	10-2004-0009400 A	1/2004
KR	20060079891 A	7/2006
SU	242774	9/1969

* cited by examiner

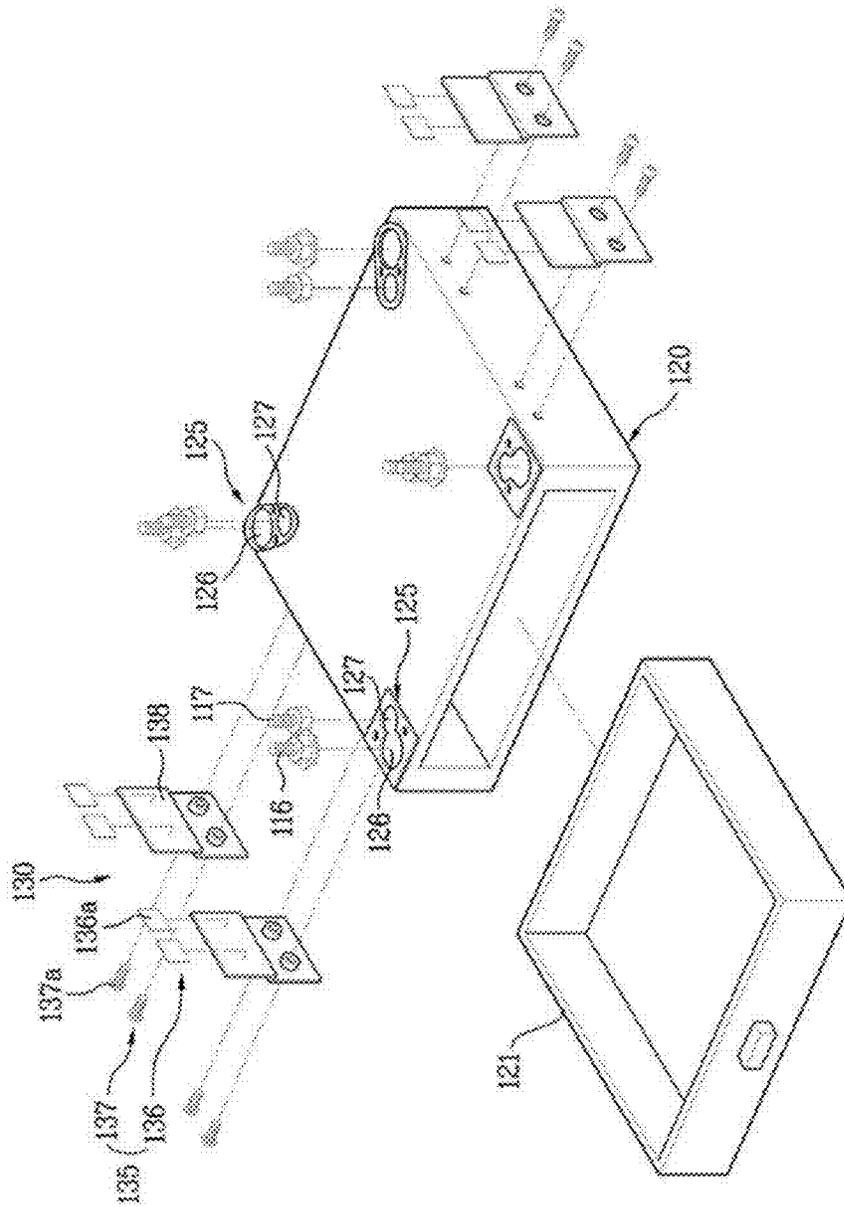
[Fig. 1]



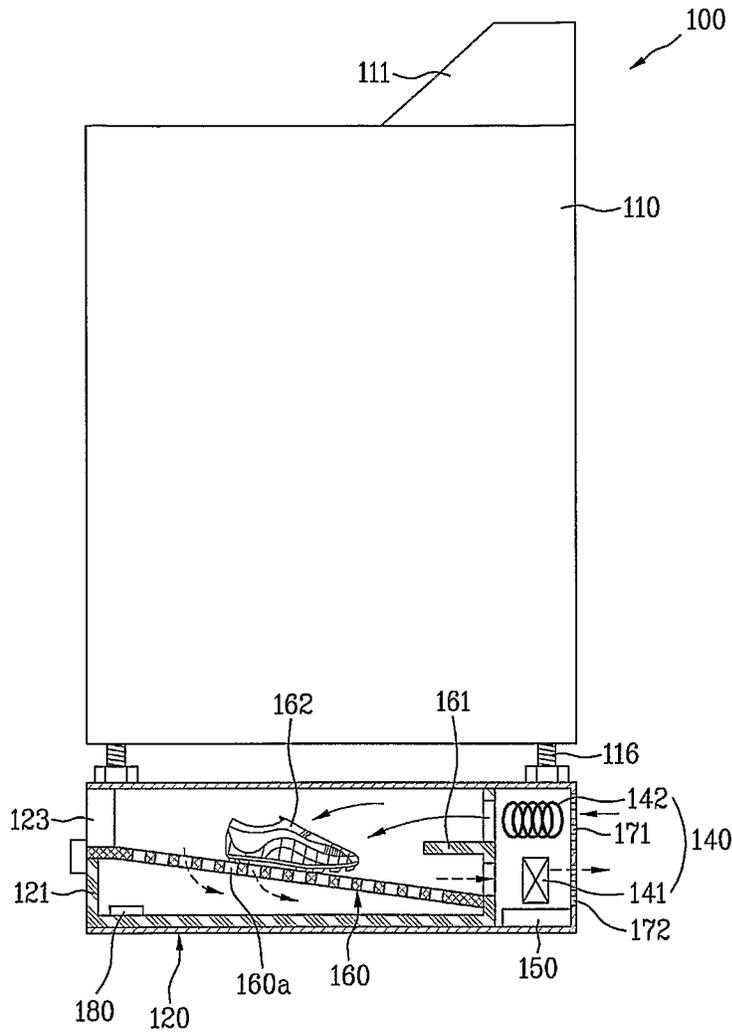
[Fig. 2]



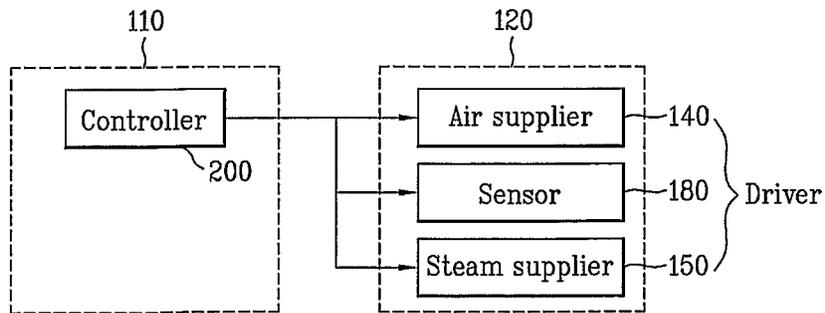
[Fig. 3]



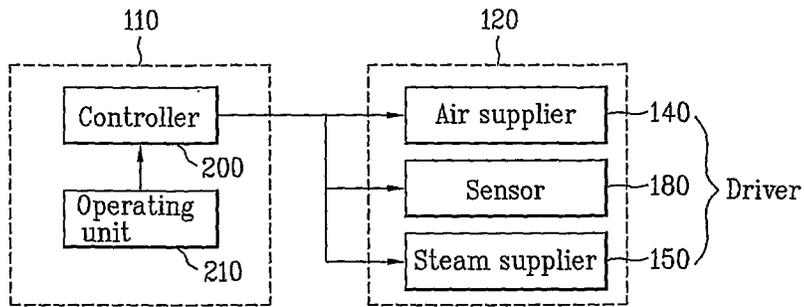
[Fig. 4]



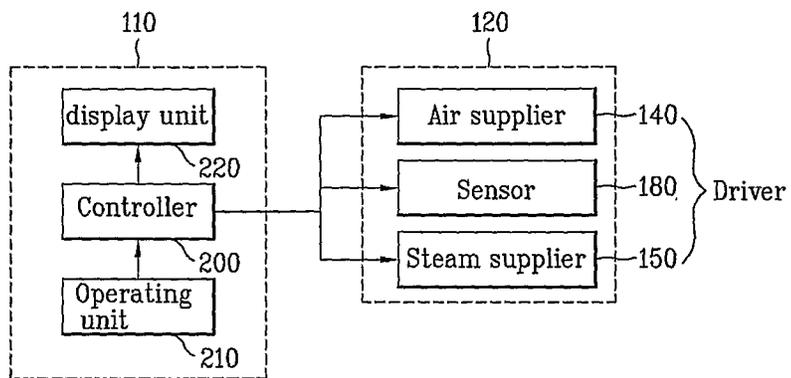
[Fig. 5]



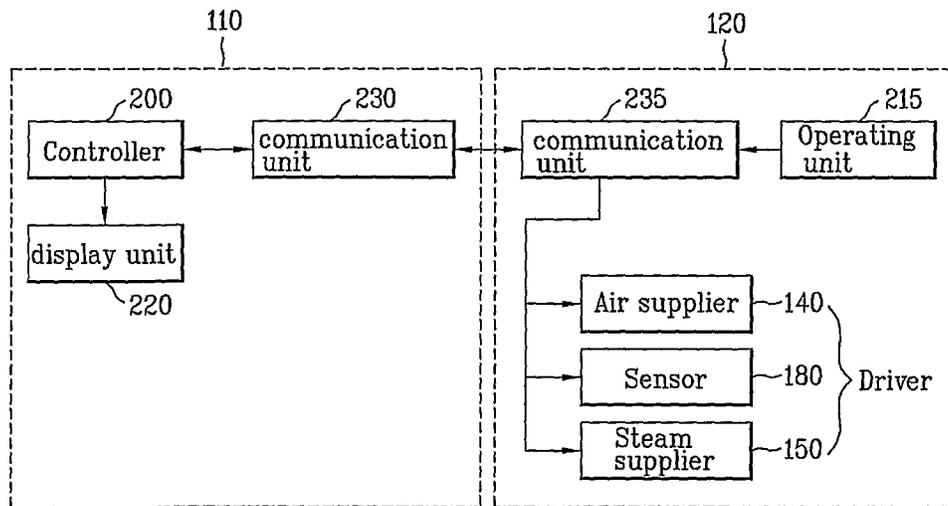
[Fig. 6]



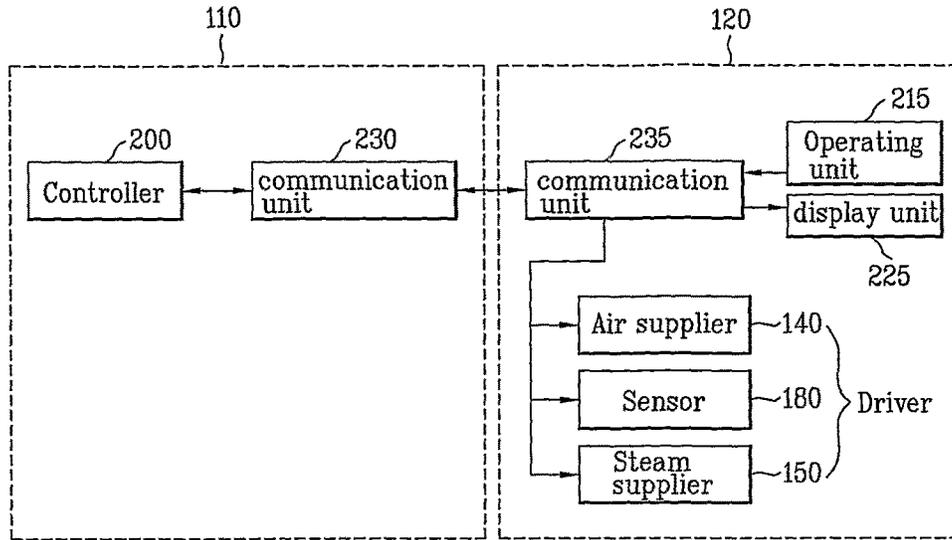
[Fig. 7]



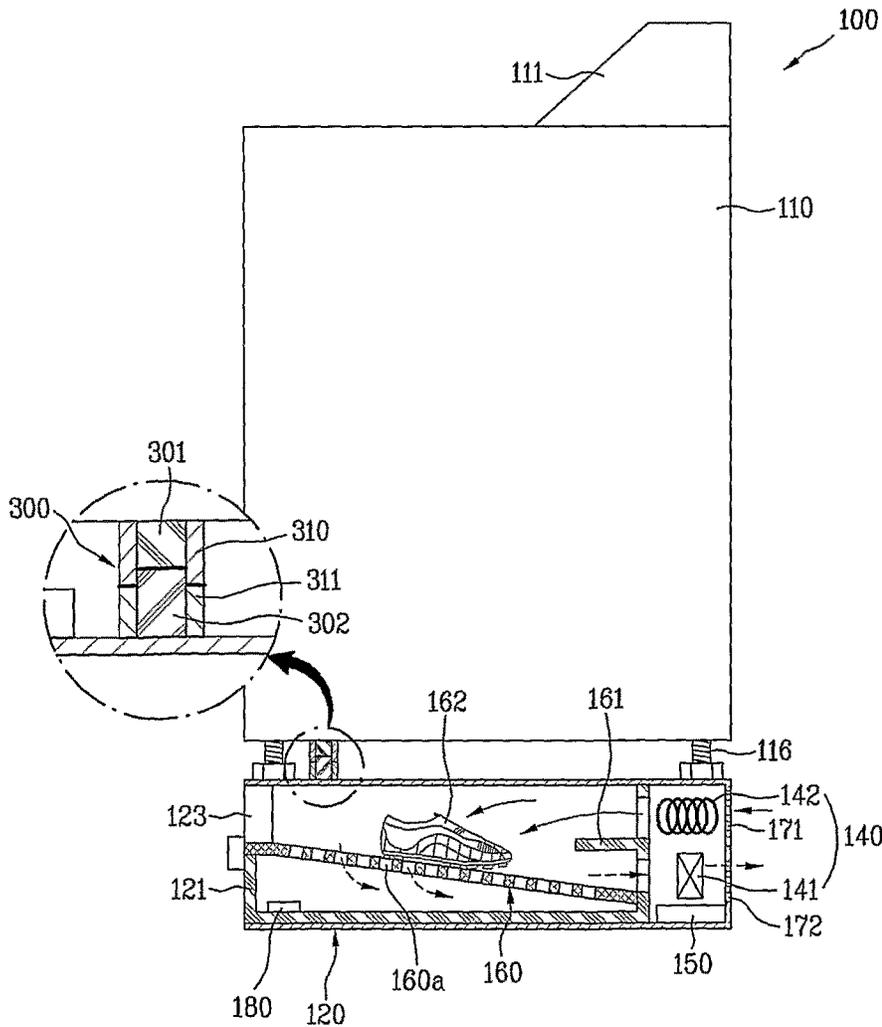
[Fig. 8]



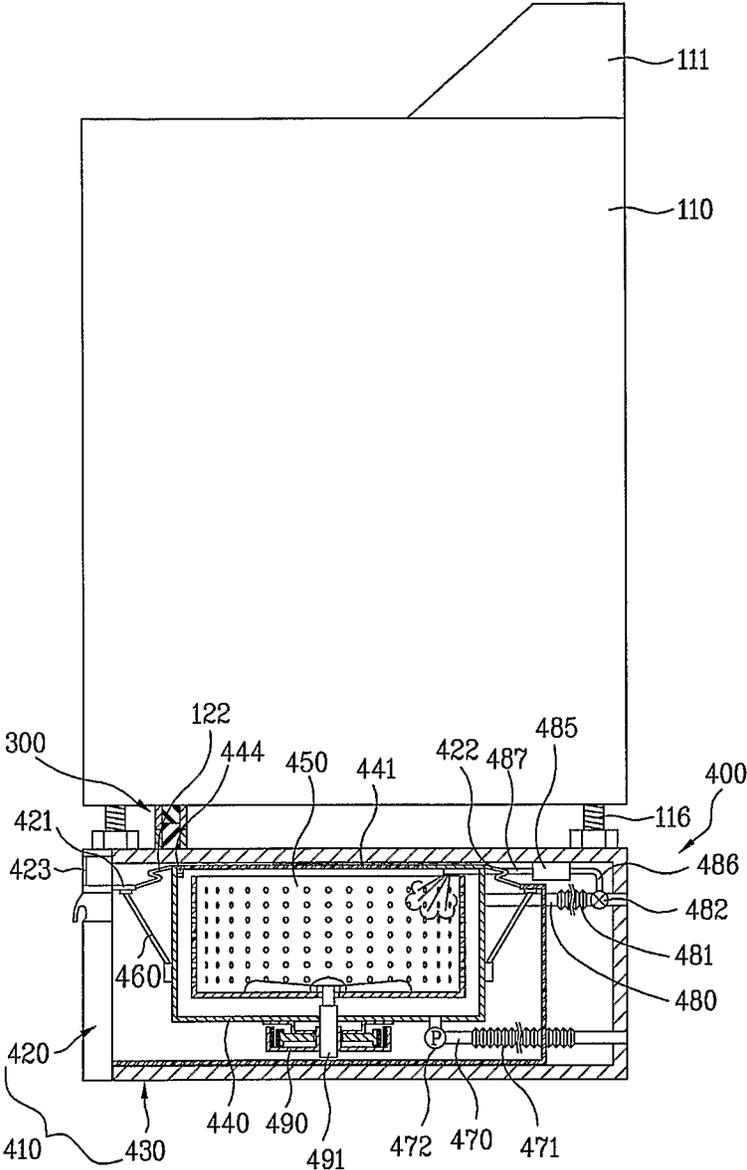
[Fig. 9]



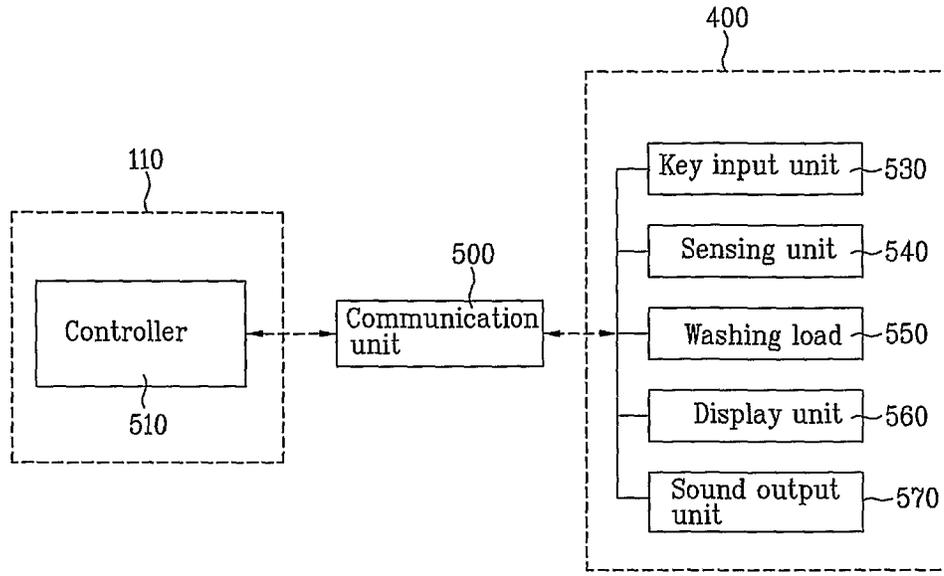
[Fig. 10]



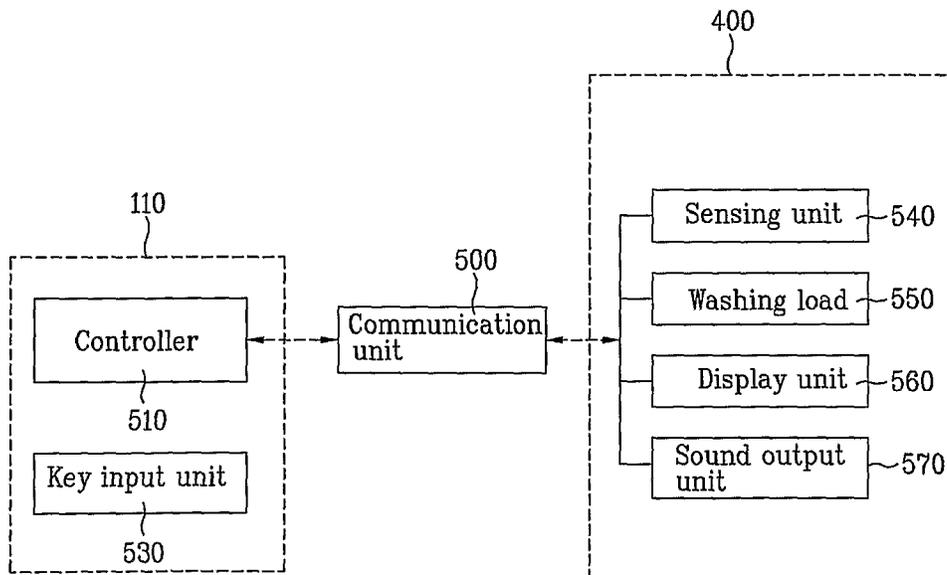
[Fig. 11]



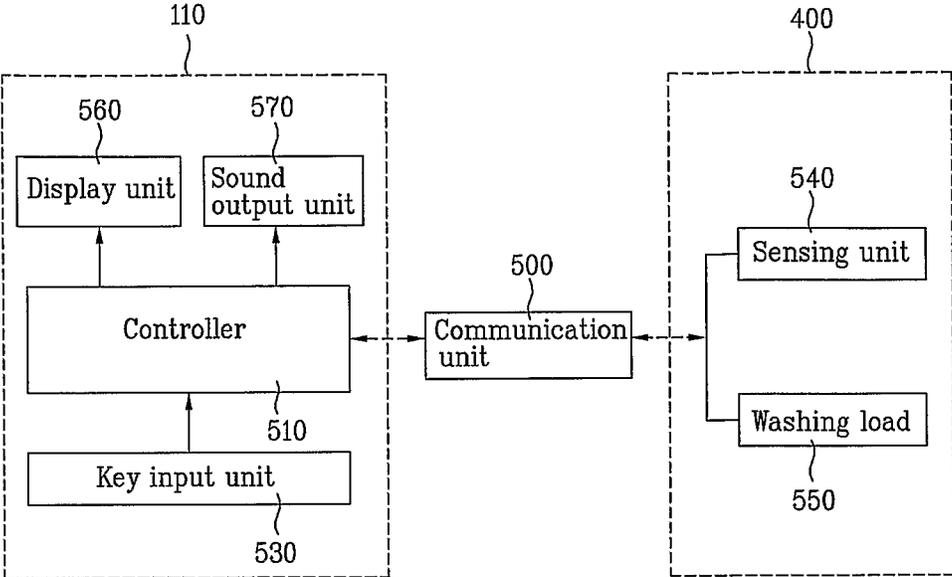
[Fig. 12]



[Fig. 13]



[Fig. 14]



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MULTIPLE LAUNDRY TREATING MACHINE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional application of U.S. patent application Ser. No. 12/310,365, filed Feb. 23, 2009, which is a National Stage Application of PCT/KR2007/003966, filed Aug. 20, 2007 and claims priority to Korean Application No. 10-2006-0079895, filed on Aug. 23, 2006, and Korean Application No. 10-2006-0135130, filed on Dec. 27, 2006, all of which are incorporated by referenced in their entirety herein.

TECHNICAL FIELD

The present invention relates to a laundry treating machine, and more particularly, to a multiple laundry treating machine configured by coupling an auxiliary laundry treating device such as an auxiliary drying device or an auxiliary washing device to a main laundry treating device.

BACKGROUND ART

Generally, a laundry treating machine means an apparatus for washing, drying, or washing and drying laundry. One laundry treating machine can perform only a washing function or a drying function or can perform both the washing and drying functions. Recently, a laundry treating machine, which includes a steam supplier, to have a refresh function for, for example, removal of creases, odor, static electricity, etc. from laundry, has been available.

A representative one of such laundry treating machines is a washing machine.

Meanwhile, conventional laundry treating machines are classified into a front loading type and a top loading type in accordance with the direction that laundry is taken out. Also, conventional laundry treating machines are classified into a vertical-axis type, in which a pulsator or a washing tub rotates, and a horizontal-axis type, in which a drum rotates. The representative example of such a horizontal-axis type laundry treating machine is a drum washing machine or a drum drying machine.

Such laundry treating machines have a tendency to have a large size, in order to meet the recent demand of users. That is, laundry treating machines used for domestic purposes have a tendency to have a large couter size.

Meanwhile, there are conventional laundry treating machines having no drying function. In association with such a laundry treating machine, which may be a washing machine, there is a problem in that, when the user wants a drying function, it is necessary to purchase a separate drying machine or a separate washing machine having a drying function. Thus, when it is desired to obtain both the washing function and the drying function, the expenses burden on the consumer must correspondingly increase.

Where laundry treating machines having a drying function have a large size, there may be a problem in terms of saving of energy because they are driven in a large capacity even when a small amount of laundry is dried. Meanwhile, in drum type drying machines, there is a problem in that it is difficult to dry shoes or clothes. Of course, it may be possible to dry shoes, etc. by installing a rack in a drum, to lay the shoes on the rack, and maintaining the rack in a horizontal state, irrespective of a rotation of the drum. In this

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case, however, there is an inconvenience because the user should frequently perform the installation and separation of the rack.

Generally, only one large-capacity washing machine is equipped in a home. When it is desired to wash different kinds of laundry in an independent manner, using the washing machine, it is necessary to operate the washing machine several times.

Also, the use of such a large-capacity washing machine in washing a small amount of laundry is undesirable in terms of saving of energy. This is because the washing course set in the large-capacity washing machine is typical for the case, in which the amount of laundry to be washed is large, so that the amount of water to be consumed in the washing course is large. As a result, the washing time and the consumption of energy increase unnecessarily.

FIG. 1 is a perspective view illustrating a conventional laundry treating machine.

As shown in FIG. 1, the conventional laundry treating machine 10 includes a body forming the outer structure of the laundry treating machine 10, and a control panel 11 arranged at the front surface or top surface of the body. The control panel 11 may include a controller for controlling the operation of the laundry treating machine 10. In accordance with this configuration, the user enables the laundry treating machine 10 to perform a laundry treating operation such as a washing operation or a drying operation by manipulating the control panel 11.

The laundry treating machine 10 may be a washing machine, a drying machine, or a washing/drying machine.

The laundry treating machine 10 may further include a pedestal 20 for supporting the laundry treating machine 10 on a floor. In this case, the laundry treating machine 10 is laid on the pedestal 20.

Generally, the pedestal 20 is defined with a certain space therein. The space has a structure including a drawer 21, which can be forwardly drawn. The pedestal 20 not only supports the laundry treating machine 10, but also functions as a storage box for storing a detergent or laundry.

In the conventional laundry treating machine, however, the pedestal 20 does not have any function for treating laundry.

DISCLOSURE OF INVENTION

Technical Problem

The present invention has been made in view of the above-mentioned problems, and an object of the present invention is to provide a combination of a laundry treating machine with an auxiliary laundry treating device capable of treating a small amount of laundry without driving the laundry treating machine, which has a relatively-large capacity, to achieve a convenience in use and to save energy.

Another object of the present invention is to provide a multiple laundry treating machine, which includes a washing machine only having a washing function, and a drying function easily addable to the washing machine.

Another object of the present invention is to provide a multiple laundry treating machine capable of easily drying laundry including shoes, hats, etc. which are difficult to be dried using a conventional drum type drying machine.

Still another object of the present invention is to utilize an auxiliary space defined in a conventional laundry treating machine, such as a pedestal, as an auxiliary drying device or an auxiliary washing device.

In one aspect of the present invention, a multiple laundry treating machine comprises: a main laundry treating device for washing or drying laundry contained in an interior of the main laundry treating device; an auxiliary laundry treating device arranged at one side of the main laundry treating device, the auxiliary laundry treating device having a volume and a height respectively smaller than a volume and a height of the main laundry treating device, and having a laundry container formed in an interior of the auxiliary laundry treating device; and a connecting unit for connecting the main and auxiliary laundry treating devices, to enable communication or control operations between the main and auxiliary laundry treating devices.

The connection by the connecting unit is achieved as the main and auxiliary laundry treating devices are coupled.

The main laundry treating device may be a general washing machine. The auxiliary laundry treating device may be installed and used independently of the main laundry treating device. However, it is preferred that the auxiliary laundry treating device be coupled to one side of a body of the main laundry treating device by the coupler. This is because it is desirable to integrate laundry treating devices including the main laundry treating device and the auxiliary laundry treating device, which assists the main laundry treating device, in order to effectively carry out a series of laundry treating processes. It is also preferred that the auxiliary laundry treating device be coupled to the main laundry treating device, in terms of the utilization of space.

Of course, the main laundry treating device, which is a main component of the multiple laundry treating machine, may be a washing machine, a drying machine, or a washing/drying machine. However, the main laundry treating device is not limited to such machines. The main laundry treating device may be a spin-drying machine, which only performs a spin drying function.

Preferably, the connecting unit comprises connectors respectively provided at the main and auxiliary laundry treating devices. As the connectors are connected, lines for transmission of communication or control signals between the main and auxiliary laundry treating devices are connected. Of course, it is preferred that the lines have the form of harnesses.

Preferably, the connecting unit further comprises insulators for insulating the connectors, respectively. The insulators may enhance a stability in accordance with the insulation of the connectors. The insulators may be formed integrally with the connectors, respectively.

Of course, such an insulator may be provided at only one of the main and auxiliary laundry treating devices.

Preferably, the connection by the connecting unit, namely, the connection of the connectors, is achieved, simultaneously with the coupling of the main and auxiliary laundry treating devices. Accordingly, it is possible to eliminate a separate manual task by the user or service man to connect the connectors. Since the main and auxiliary laundry treating devices are coupled by the coupler, it is possible to secure the reliability of the connection between the connectors.

Preferably, the driver comprises an air supplier for forcibly supplying air to the laundry container. Preferably, the air supplier comprises a blowing fan for blowing air, and a heater for heating air. In this case, it is possible to perform a drying operation for laundry through the auxiliary laundry treating device.

Preferably, the driver comprises at least one of a temperature sensor for sensing an internal temperature of the laundry

container and a humidity sensor for sensing an internal humidity of the laundry container. In this case, it is possible to more effectively achieve a desired drying operation, using the temperature sensed by the temperature sensor or the humidity sensed by the humidity sensor.

The driver may further comprise a steam supplier for supplying steam to the laundry container.

Preferably, the auxiliary laundry treating device is a pedestal for supporting the main laundry treating device on a floor. Preferably, the laundry container has a form of a drawer drawable forwardly at a front side of the body of the auxiliary laundry treating device.

Inlets may be formed at an upper portion of a rear wall of the auxiliary laundry treating device, to introduce air into the auxiliary laundry treating device. Also, outlets may be formed at a lower portion of the rear wall of the auxiliary laundry treating device, to outwardly discharge air from the auxiliary laundry treating device. Preferably, an upper rear wall portion of the drawer communicates with the inlets.

Preferably, a lower rear wall portion of the drawer communicates with the outlets.

Preferably, the air supplier and steam supplier are arranged between the rear wall of the drawer and the rear wall of the auxiliary laundry treating device.

Of course, for the installation of the above-described elements, the side walls of the auxiliary laundry treating device and drawer may be used, in place of the rear walls of the auxiliary laundry treating device and drawer. In this case, introduction and discharge of air are carried out at one lateral side of the auxiliary laundry treating device, in place of the rear side of the auxiliary laundry treating device. Since the "rear side" and "lateral side" are different from each other, only in terms of the reference direction, it may be considered that the introduction and discharge of air at one lateral side of the auxiliary laundry treating device include the introduction and discharge of air at the rear side of the auxiliary laundry treating device.

The auxiliary laundry treating device may further comprise a rack, on which laundry is laid. Preferably, the rack is arranged in the drawer such that the interior of the laundry container is partitioned into upper and lower spaces by the rack. The upper and lower spaces communicate with each other through the rack. The rack may be inclinedly arranged. It is preferred that the rack be downwardly inclined toward a position where air is introduced.

Preferably, an air guide is provided at the upper rear wall portion of the drawer such that air guide extends into the interior of the drawer. The air guide not only uniformly supplies air over the upper portion of the drawer, but also minimizes the interference between the introduction air and discharge air.

The main laundry treating device may include an operating unit for operating the auxiliary laundry treating device in accordance with a user's selection. That is, the operating unit, which operates the auxiliary laundry treating device, may be provided at the main laundry treating device, in place of the auxiliary laundry treating device. The main laundry treating device may include a display unit for displaying an operation state of the auxiliary laundry treating device. That is, the display unit, which displays an operation state of the auxiliary laundry treating device, may be provided at the main laundry treating device, in place of the auxiliary laundry treating device. Accordingly, the user can operate the auxiliary laundry treating device through the operating unit provided at the main laundry treating device, and can check the operation state of the auxiliary laundry treating device through the display unit provided at the main

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laundry treating device. In other words, the main laundry treating device may include the operating unit for operating the auxiliary laundry treating device, separate from the operating unit for operating the main laundry treating device. Also, the main laundry treating device may include the display unit for displaying the operation state of the auxiliary laundry treating device, separately from the display unit for displaying the operation state of the main laundry treating device. Of course, it may be possible to display the operation states of the main and auxiliary laundry treating devices, through a single display unit.

The auxiliary laundry treating device may include an operating unit for operating the auxiliary laundry treating device in accordance with a user's selection. The auxiliary laundry treating device may also include a display unit for displaying an operation state of the auxiliary laundry treating device.

The main and auxiliary laundry treating devices may include communication units for wired or wireless communications between the main and auxiliary laundry treating devices. Through the communication units, it may be possible to transmit and receive control signals.

In accordance with the present invention, it is possible to wash or dry a large amount of laundry through the main laundry treating device, while washing or drying a small amount of laundry through the auxiliary laundry treating device. Accordingly, it is possible to achieve a convenience in use while saving energy. It is also possible to easily dry laundry including shoes, hats, etc. which are difficult to be dried using a conventional drum type drying machine.

In another aspect of the present invention, a multiple laundry treating machine comprises: a main laundry treating device for performing a washing stroke or a drying stroke; and an auxiliary laundry treating device arranged at one side of the main laundry treating device, the auxiliary laundry treating device including a tub for containing laundry, and performing a washing stroke in the tub under a control of the main laundry treating device.

A controller for controlling the overall operation of the main and auxiliary laundry treating devices may be provided at the main laundry treating device.

A key input unit for inputting a user command for the main and auxiliary laundry treating devices may be provided at the main laundry treating device, together with the controller for controlling the overall operation of the main and auxiliary laundry treating devices.

A display unit for displaying the user command input from the key input unit or a stroke state under a control of the controller may be provided at the main laundry treating device, together with the controller for controlling the overall operation of the main and auxiliary laundry treating devices and the key input unit for inputting a user command for the main and auxiliary laundry treating devices.

Advantageous Effects

In accordance with the present invention, it is possible to achieve a convenience in use and to save energy by the provision of an auxiliary drying device or an auxiliary washing device capable of treating a small amount of laundry without driving a laundry treating device having a relatively-large capacity.

It is also possible to easily add a drying function to a washing machine only having a washing function.

Also, it is possible to easily dry laundry including shoes, hats, etc. which are difficult to be dried using a conventional drum type drying machine. It is also possible to utilize an

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auxiliary space in a conventional laundry treating machine, for example, a pedestal, as an auxiliary laundry treating device.

Thus, in accordance with the present invention, it is possible to provide an inexpensive multiple laundry treating machine achieving a maximal use of space, and thus a convenience in use.

In accordance with the present invention, washing and drying operations can be simultaneously carried out in one multiple laundry treating machine. Also, two different drying methods may be simultaneously carried out for different kinds of laundry. Accordingly, there are effects of achieving a convenience in use and saving of time.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included to provide a further understanding of the invention, illustrate embodiments of the invention and together with the description serve to explain the principle of the invention.

In the drawings:

FIG. 1 is a perspective view illustrating a conventional laundry treating machine including a pedestal;

FIG. 2 is a perspective view illustrating a multiple laundry treating machine according to the present invention;

FIG. 3 is an exploded perspective view of an auxiliary laundry treating machine shown in FIG. 2;

FIG. 4 is a sectional view simply illustrating the multiple laundry treating machine according to the present invention;

FIG. 5 is a block diagram illustrating a first embodiment of the operation control type for the auxiliary laundry treating device according to the present invention;

FIG. 6 is a block diagram illustrating a second embodiment of the operation control type for the auxiliary laundry treating device according to the present invention;

FIG. 7 is a block diagram illustrating a third embodiment of the operation control type for the auxiliary laundry treating device according to the present invention;

FIG. 8 is a block diagram illustrating a fourth embodiment of the operation control type for the auxiliary laundry treating device according to the present invention;

FIG. 9 is a block diagram illustrating a fifth embodiment of the operation control type for the auxiliary laundry treating device according to the present invention;

FIG. 10 is a sectional view illustrating an embodiment of the line connection between main and auxiliary laundry treating devices in the multiple laundry treating machine according to the present invention;

FIG. 11 is a sectional view illustrating a multiple laundry treating machine according to another embodiment of the present invention;

FIG. 12 is a block diagram illustrating an embodiment of the operation control type for the auxiliary laundry treating device shown in FIG. 11;

FIG. 13 is a block diagram illustrating another embodiment of the operation control type for the auxiliary laundry treating device shown in FIG. 11; and

FIG. 14 is a block diagram illustrating another embodiment of the operation control type for the auxiliary laundry treating device shown in FIG. 11.

BEST MODE FOR CARRYING OUT THE INVENTION

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. In

a multiple laundry treating machine according to the present invention, a main laundry treating device thereof may be a general washing machine, a general drying machine, or a general washing/drying machine. Accordingly, no detailed description of the main laundry treating device will be given.

Hereinafter, a multiple laundry treating machine according to an exemplary embodiment of the present invention will be described in detail with reference to FIGS. 2 and 3.

The multiple laundry treating machine 100 according to the illustrated embodiment of the present invention includes a main laundry treating device 110 and an auxiliary laundry treating device 120. Although an auxiliary drying device is used for the auxiliary laundry treating device 120 in the illustrated embodiment, the auxiliary laundry treating device 120 is not limited thereto. An auxiliary washing device may be used for the auxiliary laundry treating device 120.

The multiple laundry treating machine 100 of the present invention includes a pedestal not only functioning as a simple pedestal, but also functioning as the auxiliary laundry treating device 120, different from conventional pedestals. The pedestal of the multiple laundry treating machine 100 is also different from the conventional pedestals in that a coupler 130 is mounted to the pedestal, to stably couple the auxiliary laundry treating device 120 to the main laundry treating device 110.

In accordance with the present invention, the auxiliary laundry treating device 120 is arranged at one side of the main laundry treating device 110, as shown in FIG. 2. For example, the auxiliary laundry treating device 120 may be arranged beneath the main laundry treating device 110, as shown in FIG. 2. Alternatively, the auxiliary laundry treating device 120 may be arranged over the main laundry treating device 110. In the latter case, a controller for the laundry treating machine, in particular, a control panel 111, may be arranged at a front surface of the main laundry treating device 110.

The auxiliary laundry treating device 120 may be arranged at one side of the main laundry treating device 110. However, it is preferred that the auxiliary laundry treating device 120 is arranged over or beneath the main laundry treating device 110, taking into consideration utilization of space and design.

As shown in FIGS. 2 and 3, the auxiliary laundry treating device 120 is defined therein with a laundry container in accordance with the present invention. The multiple laundry treating machine also includes the coupler 130 as described above. The main laundry treating device 110 and auxiliary laundry treating device 120 are coupled by the coupler 130. The auxiliary laundry treating device 120 supports the main laundry treating device 110 on a floor.

The multiple laundry treating machine may further include leg supporters 125 provided at the top of the auxiliary laundry treating device 120, to support side surfaces of lower legs 116 and 117 mounted to the bottom of the main laundry treating device 110.

Each leg supporter 125 comprises a panel formed with a first seating hole 126 for providing a seat for one leg 116 included in the main laundry treating device 110, in the case in which the main laundry treating device 110 is a washing machine, and a second seating hole 127 for providing a seat for one leg 117 included in the main laundry treating device 110, in the case in which the main laundry treating device 110 is a drying machine. Each leg supporter 125 is mounted to the top of the auxiliary laundry treating device 120 by means of screws. Here, the washing machine and drying

machine are examples of laundry treating machines, in which the outer size of the washing machine is larger than that of the drying machine.

The leg supporters 125 are fixed to respective corners of the top of the auxiliary laundry treating device 120. In each of the leg supporters 125 fixed to the front corners of the auxiliary laundry treating device 120, the first and second seating holes 126 and 127 are connected to each other. On the other hand, in each of the leg supporters 125 fixed to the rear corners of the auxiliary laundry treating device 120, the first and second seating holes 126 and 127 are separated from each other. In accordance with these structures, it is possible to easily achieve the seating of the legs 116 for the washing/drying machine.

Accordingly, the position of the main laundry treating device 110 with respect to the auxiliary laundry treating device 120 is automatically determined, simultaneously with the seating of the leg supporters 125 on the seats of the first seating holes 126 or second seating holes 127.

In each leg supporter 125, the first seating hole 126 is arranged outside the second seating hole 127 along a diagonal line on the bottom of the main laundry treating device 110. This is because, typically, the washing machine is larger than the drying machine.

The coupler 130 includes coupling members 138 each mounted to both the lower portion of a side surface of the main laundry treating device 110, which may be a washing machine or drying machine, and the upper portion of a side surface of the auxiliary laundry treating device 120, and fixing members 135 for fixing each coupling member 138 to both the associated side surface of the main laundry treating device 110 and the associated side surface of the auxiliary laundry treating device 120.

As shown in FIG. 3, the coupler 130 may include at least two coupling members 138 each coupling the adjacent side surfaces of the auxiliary laundry treating device 120 and main laundry treating device 110, each of which has a hexahedral shape.

In addition to the above-described configuration, the coupler 130 may further include a third coupling member (not shown) for coupling the rear surfaces of the auxiliary laundry treating device 120 and main laundry treating device 110.

The coupler 130 may be configured to cope with a variation in the height of the washing machine legs 116 or drying machine legs 117.

Each fixing member 135 includes a first fixing member 136 for fixing an upper portion of the associated coupling member 138 to a lower portion of the side surface of the main laundry treating device 110, namely, the washing machine or drying machine, to which the coupling member 138 is mounted, and a second fixing member 137 for fixing a lower portion of the coupling member 138 to an upper portion of the side surface of the auxiliary laundry treating device 120, namely, the pedestal, to which the coupling member 138 is mounted.

At least one of the first and second fixing members 136 and 137 may comprise a member coated, at opposite surfaces thereof, with an adhesive material, for example, a double-sided tape.

Alternatively, at least one of the first and second fixing members 136 and 137 may comprise a fastener such as a screw. Where screws are used for each fixing member 135, the associated coupling member 138 preferably has fastening holes formed through the upper portion of the coupling member 138 while being spaced apart from each other by a certain distance.

Of course, the coupler for coupling the main laundry treating device **110** and auxiliary laundry treating device **120** may have various configurations different from the above-described configuration.

In the present invention, it is preferred that the volume of the auxiliary laundry treating device **120** be smaller than the volume of the main laundry treating device **110**, to which the auxiliary laundry treating device **120** is coupled. It is also preferred that the height of the auxiliary laundry treating device **120** be shorter than the height of the main laundry treating device **110**. This is because the auxiliary laundry treating device **120** is adapted to perform auxiliary functions for the main laundry treating device **110** in the present invention.

Where the auxiliary laundry treating device **120** functions as a pedestal for the main laundry treating device **110**, it is preferred that at least one of the lateral and longitudinal widths of the auxiliary laundry treating device **120** be equal to or longer than that of the main laundry treating device **110**, taking into consideration the stability and appearance design of the multiple laundry treating machine **100**. However, where the auxiliary laundry treating device **120** is coupled to the top of the main laundry treating device **110**, it is preferred that at least one of the lateral and longitudinal widths of the auxiliary laundry treating device **120** be equal to or shorter than that of the main laundry treating device **110**.

Hereinafter, the configuration of the auxiliary laundry treating device of the present invention will be described in detail with reference to FIG. 4.

FIG. 4 is a sectional view simply illustrating the configuration of the auxiliary laundry treating device of the present invention.

In accordance with the present invention, the auxiliary laundry treating device **120**, namely, the auxiliary drying device, is coupled to the main laundry treating device **110**, to form one multiple laundry treating machine **100**. In this case, the main laundry treating device **110** receives laundry therein, and performs a washing or drying operation for the laundry. That is, the main laundry treating device **110** may be a general washing machine or a washing machine having a drying function.

The multiple laundry treating machine **100** includes a coupler **130** for coupling the auxiliary laundry treating device **120** to one side of the main laundry treating device **110**. The configuration of the coupler **130** is illustrated in FIG. 3.

The auxiliary laundry treating device **120** includes a laundry container defined in the interior of the auxiliary laundry treating device **120** in the form of a space to contain laundry therein, in order to perform auxiliary functions associated with laundry treatment. Although the laundry container may have various shapes, it is preferred that the laundry container have the form of a drawer **121**, which is forwardly drawably at the front side of the auxiliary laundry treating device **120**. Of course, the laundry container is not limited to the form of the drawer **121**. For the convenience of the description, however, the following description will be given in conjunction with the case, in which the laundry container is the drawer **121**.

The auxiliary laundry treating device **120** includes a driver, which may be of various types, to dry or refresh laundry, shoes, etc. contained in the laundry container **121**.

The driver includes an air supplier **140** for forcibly supplying air to the laundry container **121**.

The driver also includes a steam supplier **150** for supplying steam to the laundry container **121**. The steam supplier

150 includes nozzles (not shown), to spray steam into the laundry container **121** from the top or rear side of the auxiliary laundry treating device **120**.

The air supplier **140** includes a blowing fan **141** for blowing air, and a heater **142** for heating air. As the blowing fan **141** operates, ambient air is introduced into the laundry container, namely, the drawer **121**, and is then outwardly discharged out of the drawer **121**. The ambient air is introduced into the drawer **121** after being heated by the heater **142**.

The heater **142** may be of various types, for example, an electric type or a gas type. Taking into consideration the installation space of the auxiliary laundry treating device **120**, it is preferred that the heater **142** be of an electric type.

Thus, the auxiliary laundry treating device **120** according to the present invention can perform a drying function through the air supplier **140**. It is preferred that the heater **142** be a capacity-variable heater capable of varying the temperature of air heated by the heater. This is because specific clothes exhibit a low resistance to heat, and in particular, shoes made of a rubber material exhibit a low resistance to heat.

The driver may include at least one of a temperature sensor for sensing the internal temperature of the laundry container **121** and a humidity sensor for sensing the internal humidity of the laundry container **121**. Accordingly, it is possible to appropriately control the drying time or the temperature of supplied air by sensing the internal temperature or humidity of the laundry container **121**.

The steam supplier **150** supplies steam to the interior of the laundry container **121**. The supplied steam comes into contact with laundry contained in the laundry container **121**, and thus performs sterilization of the laundry and removal of creases, odor, etc. from the laundry. Thus, the auxiliary laundry treating device **120** performs a refresh function through the steam supplier **150**. Of course, the above-described drying function is carried out, together with the refresh function.

Meanwhile, it is preferred that inlets **171** be formed at an upper portion of the rear wall of the auxiliary laundry treating device **120**, to introduce air into the auxiliary laundry treating device **120**. Also, it is preferred that outlets **172** be formed at a lower portion of the rear wall of the auxiliary laundry treating device **120**, to outwardly discharge air from the auxiliary laundry treating device **120**. The rear wall of the laundry container **121** communicates, at an upper portion thereof, with the inlets **171**. The rear wall of the laundry container **121** also communicates, at a lower portion thereof, with the outlets **172**. Accordingly, ambient air is introduced into the interior of the laundry container **121** via the upper rear wall portion of the auxiliary laundry treating device **120** and the upper rear wall portion of the laundry container **121**, and is then discharged from the interior of the laundry container **121** via the lower rear wall portion of the laundry container **121** and the lower rear wall portion of the auxiliary laundry treating device **120**.

The blowing fan **141**, which functions to generate a flow of air, and the heater **142**, which heats air, may be arranged between the rear wall of the laundry container **121** and the rear wall of the auxiliary laundry treating device **120**. However, the arrangement of these elements is not limited to the above-described arrangement. The air supplier **140**, which includes the blowing fan **141** and heater **142** as described above, may be arranged at any position in a path, along which air is introduced or discharged. Although not shown in FIG. 4, it is preferred that the spaces, where the

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blowing fan **141** and heater **142** are arranged, respectively, be partitioned from each other.

FIG. 4 illustrates an arrangement in which air is introduced through the upper portion of the laundry container **121**, and is discharged through the lower portion of the laundry container **121**. However, it may be possible to implement an arrangement in which air is introduced through the lower portion of the laundry container **121**, and is discharged through the upper portion of the laundry container **121**.

Meanwhile, a rack **160** may be arranged in the laundry container **121** such that the interior of the laundry container **121** is partitioned into upper and lower spaces by the rack **160**, as shown in FIG. 4. The upper and lower spaces communicate with each other through the rack **160**. Laundry **162** may be laid on the rack **160**. The rack **160** functions to allow air supplied to the laundry **162** to be smoothly discharged.

It is preferred that a plurality of through holes **160a** be formed through the rack **160**. In this case, air present in the upper portion of the laundry container **121** can be introduced into the lower portion of the laundry container **121** through the through holes **160a**.

The rack **160** may be inclinedly arranged. In this case, it is preferred that the rack **160** be downwardly inclined toward a position where air is introduced. In this case, accordingly, air can be uniformly supplied to the laundry laid on the rack **160**.

Preferably, an air guide **161** is provided at the upper rear wall portion of the laundry container **121**. The air guide **161** not only functions to allow air to smoothly reach the front side of the laundry container **121**, but also functions to partition the flow paths of introduction air and discharge air. Accordingly, it is possible to minimize the interference between the introduction air and discharge air, and thus to achieve an enhancement in the operation efficiency, for example, the drying efficiency.

As shown in FIG. 4, the auxiliary laundry treating device **120** may include a control panel **123** separate from the control panel **111** of the main laundry treating device **110**. The control panel **123** may include a controller for controlling the operation of the auxiliary laundry treating device **120**, an operating unit for operating the auxiliary laundry treating device **120** in accordance with a user's selection, and a display unit for displaying an operation state of the auxiliary laundry treating device **120**, a communication unit for performing wired or wireless communications with the main laundry treating device **110**. Of course, the control panel **123** may include only one of the above-described units. Also, the control panel **123** itself may be dispensed with, as will be described later.

The multiple laundry treating machine **100** according to the present invention may be controlled in various types.

Hereinafter, the operation control type of the multiple laundry treating machine **100** according to the present invention, in particular, the operation control type for the auxiliary laundry treating device **120**, will be described with reference to FIGS. 5 to 9. Since the main laundry treating device **110** of the multiple laundry treating machine **100** can be controlled in a conventional operation control type, no description will be given of the operation control type for the main laundry treating device **110**.

First, an exemplary embodiment of the operation control type for the auxiliary laundry treating device **120** in the multiple laundry treating machine **100** according to the present invention will be described with reference to FIG. 5.

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In the illustrated embodiment, the operation of the auxiliary laundry treating device **120** is controlled by the controller **200** included in the main laundry treating device **110**. That is, the operation of the driver in the auxiliary laundry treating device **120** is controlled by the controller **200**. In this case, the controller **200** may be a controller for controlling the operation of the main laundry treating device **110**, as in conventional cases. Alternatively, the controller **200** may be a controller separate from the controller of the main laundry treating device **110**. The controller **200** and the driver of the auxiliary laundry treating device **120**, for example, the air supplier **140**, steam supplier **150**, and sensor **180**, are connected in a wired or wireless manner such that a control signal can be transmitted from the controller **200** to the driver.

Meanwhile, the controller **200** may be provided at the control panel **111** of the main laundry treating device **110**.

Hereinafter, another embodiment of the operation control type for the auxiliary laundry treating device **120** according to the present invention will be described with reference to FIG. 6.

In accordance with this embodiment, an operating unit **210**, which operates the auxiliary laundry treating device **120** in accordance with a user's selection, is provided at the main laundry treating device **110**, as shown in FIG. 6. The user operates the operating unit **210**, to select a desired operation mode of the auxiliary laundry treating device **120**. In accordance with the operation mode selected through the operating unit **210**, the controller **200** appropriately controls the driver of the auxiliary laundry treating device **120**. In this case, the operating unit **210** may be arranged at the control panel **111**.

Another embodiment of the operation control type for the auxiliary laundry treating device **120** according to the present invention will be described with reference to FIG. 7.

In accordance with this embodiment, a display unit **220** for displaying the operation state of the auxiliary laundry treating device **120** is provided at the main laundry treating device **110**, as shown in FIG. 7. The user can easily check, through the display unit **220**, whether or not the auxiliary laundry treating device **120** operates, or a residual drying time. The display unit **220** may be a display unit for the main laundry treating device **110**, as in conventional cases. In this case, information as to whether or not the main laundry treating device **110** operates and information as to whether or not the auxiliary laundry treating device **120** operates may be displayed in a sequential manner. The display unit **220** may be arranged at the control panel **111**.

Another embodiment of the operation control type for the auxiliary laundry treating device **120** according to the present invention will be described with reference to FIG. 8.

In accordance with this embodiment, an operating unit **215**, which operates the auxiliary laundry treating device **120** in accordance with a user's selection, is provided at the auxiliary laundry treating device **120**, as shown in FIG. 8. On the other hand, a display unit **220**, which displays the operation state of the auxiliary laundry treating device **120**, is provided at the main laundry treating device **110**. Of course, the operation of the driver of the auxiliary laundry treating device **120** is controlled by the controller **200** included in the main laundry treating device **110**.

In this case, a large number of control lines may be required to transmit control signals between the controller **200** and the driver and to transmit operation signals generated through the operating unit **215** to the controller **200**. In order to solve this problem, it is preferred that communication units **230** and **235** be provided at the main laundry

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treating device **110** and auxiliary laundry treating device **120**, respectively. The communication units **230** and **235** may be implemented in the form of communication ICs. Also, the communication units **230** and **235** may be implemented in a wired or wireless manner. Since wireless communication units can be easily implemented, using light emitters and light receivers, by a skilled person in the technical field, no description thereof will be given.

Another embodiment of the operation control type for the auxiliary laundry treating device **120** according to the present invention will be described with reference to FIG. 9.

In accordance with this embodiment, both an operating unit **215**, which operates the auxiliary laundry treating device **120** in accordance with a user's selection, and a display unit **225**, which displays the operation state of the auxiliary laundry treating device **120**, are provided at the auxiliary laundry treating device **120**, as shown in FIG. 9. Of course, the operation of the driver of the auxiliary laundry treating device **120** is controlled by the controller **200** included in the main laundry treating device **110**.

In this case, a large number of control lines may be required to transmit control signals between the controller **200** and the driver and between the controller **200** and the display unit **225**, and to transmit operation signals generated through the operating unit **215** to the controller **200**. In order to solve this problem, it is preferred that communication units **230** and **235** be provided at the main laundry treating device **110** and auxiliary laundry treating device **120**, respectively. The communication units **230** and **235** may be implemented in the form of communication ICs. Also, the communication units **230** and **235** may be implemented in a wired or wireless manner.

Meanwhile, where control lines or communication lines for transmission of control or communication signals are connected between the main laundry treating device **110** and the auxiliary laundry treating device **120** in a wired manner, in the above-described embodiments, it is preferred that the control lines or communication lines have the form of harnesses. The harnesses may be easily connected through connectors.

Hereinafter, the coupling, in particular, the line connection for transmission of control or communication signals, between the main laundry treating device **110** and the auxiliary laundry treating device **120** in the multiple laundry treating machine **100** according to the present invention will be described in detail with reference to FIG. 10.

As described above, the main laundry treating device **110** and auxiliary laundry treating device **120** may not have structures independent from each other. That is, the main laundry treating device **110** and auxiliary laundry treating device **120** may be required to be connected by lines for transmission of control and communication signals therebetween. In this case, line connections are formed between the main laundry treating device **110** and auxiliary laundry treating device **120**. For such line connections, a connecting unit **300** is provided.

The connecting unit **300** should be insulated because electricity flows through the connecting unit **300**. Furthermore, the connecting unit **300** should secure an easy line connection and a reliability of the line connection.

As shown in FIG. 10, the connecting unit **300** includes a connector **301** provided at the bottom of the main laundry treating device **110**, and a connector **302** provided at the top of the auxiliary laundry treating device **120**. To the connectors **301** and **302**, lines for transmission of communication signals, control signals, etc. are connected in the form of harnesses (not shown).

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In addition to the connectors **301** and **302**, the connector **300** includes insulators **310** and **311** for electrical insulation. The insulators **310** and **311** are formed around the connectors **301** and **302**, respectively, to perform an insulating function in a state in which the connectors **301** and **302** are connected. The insulator **310** and **311** are made of an insulating material, preferably, a material elastically compressible to a certain degree, such as rubber.

Each connector **301** or **302** and the associated insulator **310** or **311** may be integrally formed. Only one of the insulators **310** and **311** may be formed around the associated connector **301** or **302**.

As described above, the position of the main laundry treating device **110** with respect to the auxiliary laundry treating device **120** can be automatically determined by the legs **116** of the main laundry treating device **110** and the leg supporters **125**. In this regard, it is preferred that the connection between the connectors **301** and **302** be achieved, simultaneously with the automatic position determination. Also, the main laundry treating device **110** and auxiliary laundry treating device **120** are coupled by the coupler **130**, as described above. Thus, the connection between the connectors **301** and **302** and the reliability of the connection will be secured by the coupler **130**.

Hereinafter, the operation of the multiple laundry treating machine **100**, in particular, the auxiliary laundry treating device **120**, will be described in detail. The operation of the auxiliary laundry treating device **120** may be carried out, simultaneously with or independently of the operation of the main laundry treating device **110**.

First, the user draws the laundry container **121**, and then lays laundry **162**, which may be a small amount of clothes, shoes, or hats, on the rack **160**. When the laundry **162** is clothes, it is desirable to spread the cloths on the rack **160**.

Thereafter, the user selects a desired operation mode in accordance with the kind of the laundry, through the operating unit **210** or **215**. The operation mode may include various drying modes and a refresh mode.

The drying modes may be divided in accordance with a drying time and a drying temperature. The drying time and drying temperature may be determined in accordance with the kind of laundry. For example, when it is desired to dry a small amount of clothes made of cotton, a drying mode having a short drying time and a high drying temperature may be set. On the other hand, for shoes, a drying mode having a long drying time and a low drying temperature may be set.

That is, the temperature and supply time of air forcibly supplied to the space, in which laundry is contained, are varied, depending on the operation mode selected by the user.

When the operation mode is the refresh mode, high-temperature steam is supplied to the laundry. Accordingly, refresh of the laundry is carried out by the steam. That is, removal of odor and creases from the laundry and sterilization of the laundry are achieved. After the completion of the refresh mode, air may be supplied to dry the laundry, if necessary.

The controller **200** controls the driver of the auxiliary laundry treating device **120** to drive appropriately, in accordance with the operation mode selected by the user. Meanwhile, the user can check the operation state of the auxiliary laundry treating device **120**, through the display unit **220** or **225**.

Meanwhile, in accordance with another embodiment of the present invention, the multiple laundry treating machine **100** may include the main laundry treating device **110** and an

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auxiliary laundry treating device **400**, as shown in FIG. **11**. In this case, the auxiliary laundry treating device **400** functions as an auxiliary washing device.

Hereinafter, the configuration of the auxiliary laundry treating device **400** will be described in detail.

As shown in FIG. **11**, the auxiliary laundry treating device **400** according to this embodiment includes a case **410**. The case **410** includes a case body **430**, and a drawer **420** received in the case body **430**. The drawer **420** is forwardly drawable from the case body **430**.

The case body **430** has an appropriate size and a high structural strength to allow a conventional laundry treating machine to be laid thereon.

An outer tub **440** is installed in and supported by the drawer **420**. In order to support the outer tub **440**, supporters **460** are arranged at four corners of the case **410**, as shown in FIG. **11**.

The supporters **460** may have the same structure as supporters used in a conventional vertical-axis type washing machine to support an outer tub.

One end of each supporter **460** is connected to the associated corner of an upper frame **421** covering the top of the drawer **420**. The other end of each supporter **460** is connected to the peripheral wall of the outer tub **440**.

The upper end of the outer tub **440** is connected to the upper frame **421** via a gasket **422** made of a flexible sealing material. The upper frame **421** and gasket **422** function to prevent foreign matter including water from being introduced between the outer tub **440** and the drawer **420**.

Since the gasket **422** is flexible, it prevents vibration from the outer tub **440** from being transmitted to the upper frame **421**.

An outer tub door **441** is mounted to the upper end of the outer tub **440**, at which a top opening is formed. An annular rim **442** is radially inwardly protruded from the inner peripheral wall surface of the outer tub **440**. A door seal **444** is attached to the outer tub door **441**. When the outer tub door **441** is closed, the door seal **444** comes into contact with the annular rim **442**, thereby sealing the upper end of the outer tub **440**.

A hook (not shown) is mounted to the outer tub door **441**. The hook is engageable with a hook groove formed at the inner peripheral wall surface of the outer tub **440**. Preferably, the hook is supported by a spring (not shown) mounted to the outer tub door **441**. The hook has a gently-curved tip such that the hook can be engaged with or disengaged from the hook groove when an appropriate force is applied to the door **441** to close or open the door **441**.

For such a hook device, it is possible to use a well-known structure mainly used in other appliances, without any design change. Of course, other locking devices may be used in place of the hook device.

Since the auxiliary laundry treating device **400** has a relatively-low height, wash water may overflow the outer tub **440**. However, this phenomenon can be prevented by the outer tub door **441**.

An inner tub **450** is arranged in the outer tub **440**. A plurality of through holes are formed through the inner tub **450**, in order to allow water to be introduced into or discharged out of the inner tub **450**.

A motor **490** is fixedly mounted to the bottom of the outer tub **440** beneath the outer tub **440**. The motor **490** is of an outer rotor type. Accordingly, the stator of the motor **490** is fixed to the bottom of the outer tub **440** beneath the outer tub **440**. The rotor of the motor **490** includes a rotating shaft **491** extending through the bottom of the outer tub **440** such that it is directly connected to the bottom of the inner tub **450**.

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A bearing is mounted on the bottom of the outer tub **440**, to support the rotating shaft **491**.

The motor **490** has a concentrated winding structure, so that the diameter thereof is large, as compared to the height thereof.

A draining tube **470** is connected to the bottom of the outer tub **440**, to drain water. One end of the draining tube **470** is fixed to the case body **430**, and is open to the outside of the auxiliary laundry treating device **400**. The other end of the draining tube **470** is connected to the bottom of the outer tub **440** such that it is open to the interior of the outer tub **440**. A draining pump **472** is connected to the draining tube **470**.

A portion of the draining tube **470** comprises a bellows tube **471** extendable and contractable in a longitudinal direction. The bellows tube **471** is extended when the drawer **420** is forwardly drawn.

A telescopic structure may be used in place of the bellows tube structure.

A water supply tube **480** is connected, at one end thereof, to an upper portion of the outer tub **440**, to supply water. The other end of the water supply tube **480** is connected to a water supply valve **482**. Similarly to the draining tube **470**, a portion of the water supply tube **480** comprises a bellows tube **481**.

A steam generator **485** is also installed in the auxiliary laundry treating device **400**, to supply steam to the interior of the outer tub **440**. The steam generator **485** includes a water supply tube **486** connected to the water supply valve **482**, to receive water supplied through the water supply valve **482**. The steam from the steam generator **485** is supplied to the interior of the outer tub **440** via a steam tube **487**.

The steam tube has a structure variable in length, like a bellows tube.

The steam tube **487** has a steam nozzle arranged at the top of the inner tub **450**, to supply steam to the interior of the inner tub **450**.

The above-described steam generator **485** may have the same structure as a steam generator used in conventional washing machines.

Preferably, the steam generator **485** is arranged at one top corner of the case **410**.

A connector **300** is also provided for communications between the main laundry treating device **110** and the auxiliary laundry treating device **400**. Since the structure of the connector **300** is identical to that of the above-described embodiment, no description thereof will be given.

Meanwhile, the auxiliary laundry treating device **400** may include a control panel **423** separate from the control panel **111** of the main laundry treating device **110**. The control panel **423** may include a controller for controlling the operation of the auxiliary laundry treating device **400**, a key input unit for operating the auxiliary laundry treating device **400**, a display unit for displaying an operation state of the auxiliary laundry treating device **400**, a sound output unit for outputting the operation state of the auxiliary laundry treating device **400** in the form of a sound, and a communication unit **500** for performing communications with the main laundry treating device **110**. Of course, the control panel **423** may include only one of the above-described units. Also, the control panel **423** itself may be dispensed with, in accordance with the design thereof.

The main and auxiliary laundry treating devices **110** and **400** include communication modules capable of performing

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data inputting and outputting in a wired or wireless communication manner, for the communication unit **500**, respectively.

The operation of the multiple laundry treating machine according to the present invention can be controlled in various types.

Hereinafter, the operation control for the multiple laundry treating machine according to the present invention will be described with reference to FIGS. **12** to **14**. Since the operation control for the main laundry treating device **110** can be achieved in a conventional type, no description thereof will be given.

First, an exemplary embodiment of the operation control type for the auxiliary laundry treating device **400** in the multiple laundry treating machine according to the present invention will be described with reference to FIG. **12**.

In this embodiment, the operation of the auxiliary laundry treating device **400** is controlled by a controller **510** included in the main laundry treating device **110**. The controller **510** is arranged at the control panel **111** of the main laundry treating device **110**.

That is, the operation control for the driver of the auxiliary laundry treating device **400** is achieved through the controller **510**. The controller **510** is shared between the main and auxiliary laundry treating devices **110** and **400**, to control the operations of both the main and auxiliary laundry treating devices **110** and **400**.

The data transmission between the controller **510** and the auxiliary laundry treating device **400** is enabled through the wired or wireless communication unit **500**.

That is, the driver of the auxiliary laundry treating device **400**, for example, a key input unit **530**, a sensing unit **540**, a washing load **550**, a display unit **560**, and a sound output unit **570**, can perform data transmission with the controller **510** through the communication unit **500**. Preferably, the key input unit **530**, display unit **560**, and sound output unit **570** are arranged at the control panel **423** of the auxiliary laundry treating device **400**.

The washing load **550** is a load directly concerning the stroke of the auxiliary laundry treating device **400**. The washing load **550** may include the motor **490**, steam generator **485**, water supply valve **482**, draining pump **472**, etc. The washing load **550** operates in response to a control signal received from the controller **510**.

The sensing unit **540** includes various sensors required in association with the stroke of the auxiliary laundry treating device **400**, for example, a water level sensor for sensing the level of wash water in the outer tub **440**, a water temperature sensor for sensing the temperature of the wash water in the outer tub **440**, a velocity sensor for sensing the rotating velocity of the motor **490**, and a door sensor for sensing opening/closing of the door **441**. Information obtained by the sensing unit **540** is transmitted to the controller **510** via the communication unit **500**.

The stroke state of the auxiliary laundry treating device **400** is continuously displayed through the display unit **560** after the completion of the stroke or during the stroke, under the control of the controller **510**. In a situation such as the completion of the stroke or the generation of an error during the stroke, or other situation to be informed to the user, a corresponding error message or a buzz may be output through the sound output unit **570**.

Another embodiment of the operation control type for the auxiliary laundry treating device **400** in the multiple laundry treating machine according to the present invention will be described with reference to FIG. **13**.

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Similarly to the above-described embodiment, the operation of the auxiliary laundry treating device **400** in this embodiment is controlled by the controller **510** included in the main laundry treating device **110**, as shown in FIG. **13**. However, a key input unit **530**, which operates the auxiliary laundry treating device **400** in accordance with a user's selection, is provided at the main laundry treating device **110**.

The controller **510** and key input unit **530** are arranged at the control panel **111** of the main laundry treating device **110**.

That is, the operation control for the driver of the auxiliary laundry treating device **400** is achieved through the controller **510**. The controller **510** is shared between the main and auxiliary laundry treating devices **110** and **400**, to control the operations of both the main and auxiliary laundry treating devices **110** and **400**.

The key input unit **530** includes a key panel including keys for operating the main laundry treating device **110**, and a key panel including keys for operating the auxiliary laundry treating device **400**. That is, the key input unit **530** is configured to be shared between the main and auxiliary laundry treating devices **110** and **400**, to operate both the main and auxiliary laundry treating devices **110** and **400**.

Similarly to the above-described embodiment, the data transmission between the controller **510** and the auxiliary laundry treating device **400** in this embodiment is enabled through a wired or wireless communication unit **500**.

That is, the driver of the auxiliary laundry treating device **400**, for example, a sensing unit **540**, a washing load **550**, a display unit **560**, and a sound output unit **570**, can perform data transmission with the controller **510** through the communication unit **500**. Preferably, the display unit **560** and sound output unit **570** are arranged at the control panel **423** of the auxiliary laundry treating device **400**.

The washing load **550** is a load directly concerning the stroke of the auxiliary laundry treating device **400**. The washing load **550** may include the motor **490**, steam generator **485**, water supply valve **482**, draining pump **472**, etc. The washing load **550** operates in response to a control signal received from the controller **510**.

The sensing unit **540** includes various sensors required in association with the stroke of the auxiliary laundry treating device **400**, for example, a water level sensor for sensing the level of wash water in the outer tub **440**, a water temperature sensor for sensing the temperature of the wash water in the outer tub **440**, a velocity sensor for sensing the rotating velocity of the motor **490**, and a door sensor for sensing opening/closing of the door **441**. Information obtained by the sensing unit **540** is transmitted to the controller **510** via the communication unit **500**.

The stroke state of the auxiliary laundry treating device **400** is continuously displayed through the display unit **560** after the completion of the stroke or during the stroke, under the control of the controller **510**. In a situation such as the completion of the stroke or the generation of an error during the stroke, or other situation to be informed to the user, a corresponding error message or a buzz may be output through the sound output unit **570**.

Another embodiment of the operation control type for the auxiliary laundry treating device **400** in the multiple laundry treating machine according to the present invention will be described with reference to FIG. **14**.

Similarly to the above-described embodiment, the operation of the auxiliary laundry treating device **400** in this embodiment is controlled by the controller **510** included in the main laundry treating device **110**, as shown in FIG. **14**.

That is, the operation control for the driver of the auxiliary laundry treating device **400** is achieved through the controller **510**. The controller **510** is shared between the main and auxiliary laundry treating devices **110** and **400**, to control the operations of both the main and auxiliary laundry treating devices **110** and **400**.

In order to enable the control panel **111** to carry out various operations for operating the auxiliary laundry treating device **400** and various monitoring operations, the control panel **111** includes a key input unit **530** for operating the auxiliary laundry treating device **400**, a display unit **560** for displaying a stroke state of the auxiliary laundry treating device **400**, and a sound output unit **570** for outputting the stroke state of the auxiliary laundry treating device **400** in the form of a sound.

That is, in this embodiment, the control panel **423** of the auxiliary laundry treating device **400** is dispensed with. Instead, the key input unit **530**, display unit **560**, and sound output unit **570** included in the control panel **111** of the main laundry treating device **110** are also shared to the auxiliary laundry treating device **400** such that they can be used in the auxiliary laundry treating device **400**.

The key input unit **530** includes a key panel including keys for operating the main laundry treating device **110**, and a key panel including keys for operating the auxiliary laundry treating device **400**.

Also, the data transmission between the controller **510** and the auxiliary laundry treating device **400** is enabled through a wired or wireless communication unit **500**.

That is, the driver of the auxiliary laundry treating device **400**, for example, a sensing unit **540** and a washing load **550**, can perform data transmission with the controller **510** through the communication unit **500**.

The washing load **550** is a load directly concerning the stroke of the auxiliary laundry treating device **400**. The washing load **550** may include the motor **490**, steam generator **485**, water supply valve **482**, draining pump **472**, etc. The washing load **550** operates in response to a control signal received from the controller **510**.

The sensing unit **540** includes various sensors required in association with the stroke of the auxiliary laundry treating device **400**, for example, a water level sensor for sensing the level of wash water in the outer tub **440**, a water temperature sensor for sensing the temperature of the wash water in the outer tub **440**, a velocity sensor for sensing the rotating velocity of the motor **490**, and a door sensor for sensing opening/closing of the door **441**. Information obtained by the sensing unit **540** is transmitted to the controller **510** via the communication unit **500**.

In this embodiment, the stroke state of the auxiliary laundry treating device **400** is displayed through a display unit **560** included in the control panel **111** of the main laundry treating device **110**, after the completion of the stroke or during the stroke, under the control of the controller **510**. In a situation such as the completion of the stroke or the generation of an error during the stroke, or other situation to be informed to the user, a corresponding error message or a buzz may be output through the sound output unit **570**.

The display of the stroke state of the main laundry treating device **110** and the stroke state of the auxiliary laundry treating device **400** through the display unit **560** may be achieved in accordance with various methods.

For example, when one of the main and auxiliary laundry treating devices **110** and **400** is not in operation, only the stroke state of the laundry treating device, which is in operation, may be displayed.

On the other hand, when both the main and auxiliary laundry treating devices **110** and **400** are in operation, the stroke states of the main and auxiliary laundry treating devices **110** and **400** may be alternately displayed at intervals of a certain time (for example, 5 seconds).

A hot key corresponding to a "display command" may be additionally provided at the key input unit **530**, to enable the stroke states of the main and auxiliary laundry treating devices **110** and **400** to be selectively displayed in a toggle manner. For example, it may be possible to display the stroke state of the main laundry treating device **110** in response to a first input, while displaying the stroke state of the auxiliary laundry treating device **400** in response to a subsequent input.

Meanwhile, in a state, in which both the main and auxiliary laundry treating devices **110** and **400** are in operation, and the stroke state of one laundry treating device is displayed, a situation to be preferentially displayed, for example, the completion of the stroke of the other laundry treating device or the generation of an error, may occur. Accordingly, it is preferred that, when such a situation, to be preferentially displayed, occurs, the current display of the stroke state be stopped, and information representing the situation be displayed.

Similarly to the display unit **560**, the sound output unit **570** may alternately output signals at intervals of a certain time, or may output signals in accordance with the user's desire. It is also preferred that, when information, to be preferentially displayed, is generated, the sound output unit **570** preferentially output the information.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

INDUSTRIAL APPLICABILITY

In accordance with the present invention, it is possible to achieve a convenience in use and to save energy by the provision of an auxiliary drying device or an auxiliary washing device capable of treating a small amount of laundry without driving a laundry treating device having a relatively-large capacity.

It is also possible to easily add a drying function to a washing machine only having a washing function.

Also, it is possible to easily dry laundry including shoes, hats, etc. which are difficult to be dried using a conventional drum type drying machine. It is also possible to utilize an auxiliary space in a conventional laundry treating machine, for example, a pedestal, as an auxiliary laundry treating device.

Thus, in accordance with the present invention, it is possible to provide an inexpensive multiple laundry treating machine achieving a maximal use of space, and thus a convenience in use.

In accordance with the present invention, washing and drying operations can be simultaneously carried out in one multiple laundry treating machine. Also, two different drying methods may be simultaneously carried out for different kinds of laundry. Accordingly, there are effects of achieving a convenience in use and saving of time.

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The invention claimed is:

1. A multiple laundry treating machine comprising:

a main laundry treating device for performing a washing cycle or a drying cycle;

an auxiliary laundry treating device capable of being attached and detached at a side of the main laundry treating device, wherein the auxiliary laundry treating device comprises a case body forming the auxiliary laundry treating device, a drawer which can be drawn forward from the front of the case body, an outer tub installed in and supported by the drawer and a motor for driving an inner tub included in the outer tub;

a main controller at the main laundry treating device;

an auxiliary controller at the auxiliary laundry treating device;

an auxiliary washing load unit at the auxiliary laundry treating device; and

a connecting unit for connecting the main laundry treating device and the auxiliary laundry treating device to communicate with or control operations between the main laundry treating device and the auxiliary laundry treating device, wherein the connecting unit comprises a connector provided under the main laundry treating device and another connector provided above auxiliary laundry treating device, for connecting the controller of the main laundry treating device and the driver of auxiliary laundry treating device.

2. The multiple laundry treating machine according to claim 1, further comprising;

a sound output unit for generating an alarm or a sound in accordance with cycle states of the main laundry treating device and the auxiliary laundry treating device under a control of the main controller,

wherein the sound output unit is at the main laundry treating device.

3. The multiple laundry treating machine according to claim 1, wherein the washing load unit further comprises a steam supplier for supplying high-temperature steam to an interior of the outer tub.

4. The multiple laundry treating machine according to claim 3, wherein the washing load unit further comprises a water supplier for supplying wash water to the interior of the outer tub, and a drainer for outwardly draining the wash water from the outer tub.

5. The multiple laundry treating machine according to claim 1, wherein the auxiliary laundry treating device further comprises a sensing unit for sensing washing conditions associated with the washing cycle and a state of the washing cycle.

6. The multiple laundry treating machine according to claim 5, wherein the sensing unit comprises at least one of a water level sensor for sensing a level of wash water in the outer tub, a water temperature sensor for sensing a temperature of the wash water in the outer tub, a velocity sensor for sensing a rotating velocity of the washing load, and a door sensor for sensing opening/closing of a door covering the outer tub.

7. The multiple laundry treating machine according to claim 1, wherein the connecting unit comprises a coupler for coupling the main laundry treating device and the auxiliary laundry treating device, and connectors for connecting various cables for communicating or controlling operations between the main laundry treating device and the auxiliary laundry treating device; and

wherein the connectors are automatically connected when the main laundry treating device and the auxiliary laundry treating device are coupled by the coupler.

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8. The multiple laundry treating machine according to claim 1, further comprising:

a communication unit for communicating between the main laundry treating device and the auxiliary laundry treating device.

9. The multiple laundry treating machine according to claim 8, wherein the communication unit comprises communication modules at the main laundry treating device and the auxiliary laundry treating device, respectively, the communication modules capable of communicating in a wired or wireless manner.

10. The multiple laundry treating machine according to claim 1, further comprising a key input unit at an upper side of the main laundry treating device for inputting a user command to the main laundry treating device and the auxiliary laundry treating device.

11. The multiple laundry treating machine according to claim 10, further comprising;

a display unit for displaying the user command input from the key input unit or a cycle state under a control of the main controller,

wherein the display unit is at an upper side of the main laundry treating device.

12. The multiple laundry treating machine according to claim 11, wherein the display unit alternately displays cycle states of the main laundry treating device and the auxiliary laundry treating device at intervals of a predetermined time.

13. The multiple laundry treating machine according to claim 11, wherein the display unit selectively displays a cycle state of the main laundry treating device or a cycle state of the auxiliary laundry treating device, in accordance with a user's desire.

14. The multiple laundry treating machine according to claim 11, wherein the display unit preferentially displays a cycle state of the main laundry treating device or a cycle state of the auxiliary laundry treating device, in accordance with a preference order of information to be displayed.

15. The multiple laundry treating machine according to claim 10, wherein the key input unit comprises:

a main key panel including keys for controlling the main laundry treating device; and

an auxiliary key panel including keys for controlling the auxiliary laundry treating device.

16. The multiple laundry treating machine according to claim 1, wherein the main controller and the auxiliary controller are connected by the connecting unit to stop operation of the auxiliary controller and the auxiliary washing load unit are controlled by the main controller.

17. The multiple laundry treating machine according to claim 1, wherein the main controller and the auxiliary controller are connected by the connecting unit to stop operation of the main controller and the main washing load unit and the auxiliary washing load unit are controlled by the auxiliary controller.

18. The multiple laundry treating machine according to claim 1, wherein the auxiliary controller is controlled by the main controller.

19. The multiple laundry treating machine according to claim 1, wherein the main controller is controlled by the auxiliary controller.

20. The multiple laundry treating machine according to claim 1, wherein the auxiliary controller to control an operation of the main laundry treating device and the auxiliary laundry treating device.

21. The multiple laundry treating machine according to claim 1, wherein the main controller to control an operation of the main laundry treating device and the auxiliary laundry treating device.

22. The multiple laundry treating machine according to claim 1, wherein the auxiliary washing load unit is controlled by the main controller or the auxiliary controller.

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